

Magnetically Active Transparent Large Spherical Bodies for Computing

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Introduction

In the interests of exploring radically different computing concepts, as these concepts can have subsequent and unanticipated research overruns, the purpose of this publication is to explore the concept of an optical processor which functions using a purposefully large (potentially visible to the naked eye) transistor size. The handling of ultra-large numbers would be one potential application for the following concept.

Abstract

In this concept, the possibility of surrounding comparatively large, optically transparent, magnetizable spheres with light infusion/detecting mechanisms to form a greater mechanism which would constitute a holistic data processor in its own right but which could form a single node in a larger processor mechanism.

Breakthroughs in advanced timekeeping have made viable a number of novel processing and memory storage concepts. Included under that auspice is the possibility of injecting variable-helicity light from a series of millions of possible injection sources surrounding the optically transparent, transiently magnetizable sphere(s.)

In a traditional processor, the previous charge state of a transistor dictates the conductive behavior of the transistor in a subsequent cycle and allows for switching. There is increased demand for computing systems which allow, if on an analog level, for the handling large numbers. A proven example of how non-binary data handling can enhance computing lies in MLC data storage within SSDs. The more possible voltages within a voltage cell, the more densely information can be stored.

Processors can similarly benefit from the ability to handle more than two possible values. Along these lines, a novel approach involving the injection of light of variable helicity into the aforementioned spheres and using the measurement of the length of time it takes subsequent light pulses to transit the diameter of the sphere can be used to assess the extent of magnetic moment within the material. The greater that magnetic moment, the more light will be slowed in subsequent passages. In this scheme, rather than a transistor simply absorbing all of the supplied voltage or absorbing some and permitting some to pass (as when a MOSFET is in the charged state) the material making up the sphere converts a small portion of the energy of the light into magnetization of the material which, in turn, alters the speed at which light will travel through the material in subsequent cycles.

Multiple prisms of the type described on 19 October 2023 could be used to provide numerous possible values for starting helicity of light. Injected light could be made to pass through, for example, any number of helicity prisms (not unlike an optometrist's photo-opter device wherein light is injected from behind all possible prisms or at any one of a number of injection points between the layers) in order to permit the central nexus (point of intersection of all beams at the greater center) to be set to a wider variety of values of magnetization.

In addition to this variability, as all of these one-dimensional lines would intersect at the center of the aforementioned spheres, the state of magnetization brought about by all of the other beams collectively would have an influence on setting the magnetic properties of the central zone of the sphere. Thus, one would want for only the central nexus, a sphere within a sphere, to have this property of magnetizability whilst the remainder of the sphere would simply be an optically transparent material (which perhaps aids in the collimation of the light) not doped with the cuprate material. While precision timing would be essential to measuring the state of magnetization of that central nexus, it could also be creatively exploited in order to permit materials known to demagnetize at a precisely-known, fixed rate (sc. cuprates) to demagnetize partially and purposefully.

Whereas in a conventional processor, clock speeds are fixed, in this type of processor, the time between cycles could be purposefully varied as part of its desired mode of operation. Pulses would not necessarily have to be employed from all directions in any given clock cycle, but could be employed from any value between one and, depending upon the size of the sphere, perhaps 25,000 discrete directions. When one takes five possible helicity magnitudes and exponentializes this by a factor of 25,000 and then further exponentializes that value through the process of timing-offsetting (which is limited only by the precision of the timing mechanism,) the precise state of magnetization of the center of each sphere could be controlled so granularly that the center of each sphere could be made to represent any one of an extremely large range of values. As these spheres could be arrayed and as only a single precision timekeeping mechanism would be required for an entire cluster of these nodes which would sit on an integrated circuit, there is the potential for a revolutionary advancement in computing on the basis of this design concept alone. Any "drift" or inconsistency in the predicted decay of magnetization in the cuprates peculiar to specific units could be accounted for through periodic checking of the conductive speed of non-helicized light (which, to the extent it might pollute the stored data, could be compensated for through a simple additional timing delay.) Some wristwatches automatically perform such a function in order to compensate for timing inconsistencies peculiar to quartz crystals. Such a feature would be necessary as it would be impossible for any two of these processing nodes to be alike given expected variability in the properties of optical materials. Aside from a need for calibration, there is no reason why such a processor design would not be both effective and reliable.

Conclusion

As this concept would not require significant resources to experimentally verify and provided that all of the contingent technologies are readily available, the cost of prototyping this design should be modest. Precision timing affords us an unprecedented opportunity to advance our ability to measure extremely subtle variations in magnetic field strengths, which, as you can see, is an ability which is applicable to both optical and computational applications.